

43. The method of claim 14, wherein the biopharmaceutical product cryopreservation vial is located within the cryopreservation compartment such that a long axis of the oblong cross-section is oriented at an angle to a freezing front defined by freezing of the cryopreservation fluid within the cryopreservation compartment.

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44. The biopharmaceutical product cryopreservation vial of claim 30, wherein the at least one nucleating structure comprises a plurality of nucleating structures.

Please add the following new claims:

51. (New) A biopharmaceutical product cryopreservation system, for cryopreserving a biopharmaceutical product, comprising:

a cryopreservation compartment;

a cryopreservation fluid located within the cryopreservation compartment; and

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a biopharmaceutical product cryopreservation vial located within the cryopreservation compartment, and

the biopharmaceutical product cryopreservation vial comprising a body that comprises an oblong cross-section taken horizontally between the top and the bottom of the vial and defining proximal and distal ends of the body, and at least one nucleating structure, coupled to at least one of the proximal and distal ends of the body, the at least one nucleating structure contacting the cryopreservation fluid, and the body comprising a cryogenically stable material that is compatible with biopharmaceutical products.

52. (New) A method of cryopreserving biopharmaceutical products comprising

providing a cryopreservation compartment;

locating a biopharmaceutical product cryopreservation vial within the cryopreservation compartment, wherein the biopharmaceutical product cryopreservation vial comprises a body that comprises an oblong cross-section taken horizontally between

the top and the bottom of the vial and defining proximal and distal ends of the body, and at least one nucleating structure, coupled to at least one of the proximal and distal ends of the body, and the body comprising a cryogenically stable material that is compatible with biopharmaceutical products;

locating a cryopreservation fluid in a space outside of the cryopreservation vial but within the cryopreservation compartment; and

removing heat from the cryopreservation compartment, thereby freezing the cryopreservation fluid.

53. (New) A biopharmaceutical product cryopreservation vial comprising:

a body that comprises an oblong cross-section taken horizontally between the top and the bottom of the vial and defining proximal and distal ends of the body,

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at least one nucleating structure, coupled to at least one of the proximal and distal ends of the body, and

the body comprising a cryogenically stable material that is compatible with biopharmaceutical products.

54. (New) A biopharmaceutical product cryopreservation system, comprising:

a cryopreservation compartment adapted to hold cryopreservation fluid; and

a biopharmaceutical product cryopreservation vial adapted to be located within the cryopreservation compartment, and

the biopharmaceutical product cryopreservation vial comprising a body that comprises an oblong cross-section taken horizontally between the top and the bottom of the vial and defining proximal and distal ends of the body, and at least one nucleating structure, coupled to at least one of the proximal and distal ends of the body, the at least one nucleating structure adapted to contact cryopreservation fluid when present within the